

Unit 9

Day 3

More Equations with Radicals

(equations involving indices >2 and more than one radical)

$$1) \sqrt[3]{2x^2 - 5x + 4} = \sqrt[3]{2x^2}$$

$$\cancel{2x^2} - 5x + 4 = \cancel{2x^2}$$

$$-5x = -4$$

$$x = \frac{4}{5}$$

$$2) \sqrt[4]{7x^2 - 12} = x$$

$$x \geq 0$$

$$7x^2 - 12 = x^4$$

$$x^4 - 7x^2 + 12 = 0$$

$$(x^2 - 4)(x^2 - 3) = 0$$

$$x^2 = 4 \quad | \quad x^2 = 3$$

$$x = \cancel{x} 2 \quad | \quad x = \cancel{x} \sqrt{3}$$

$$x = 2, x = \sqrt{3}$$

$$\{2, \sqrt{3}\}$$

$$3) (\sqrt{y})^2 = (\sqrt{y-5} + 1)^2$$

$$\cancel{y} = \cancel{y} - 5 + 2\sqrt{y-5} + 1$$

$$4 = 2\sqrt{y-5}$$

$$2 = \sqrt{y-5}$$

$$4 = y - 5$$

$$(y = 9)$$

$$4) (\sqrt{x+2})^2 = (\sqrt{4+7\sqrt{x}})^2$$

$$x+4\sqrt{x}+4 = 4+7\sqrt{x}$$

$$x = 3\sqrt{x}$$

$$x \geq 0$$

$$x^2 = 9x$$

$$x^2 - 9x = 0$$

$$x(x-9) = 0$$

$$x=0 \quad x=9$$

$$\begin{array}{r} x^2 = 9x \\ \hline x \quad x \\ \hline x = 9 \end{array}$$

5)

$$\sqrt{x+5} - 2 = \sqrt{x+1}$$

$$\begin{array}{l} \sqrt{x+5} - 2 \geq 0 \\ \sqrt{x+5} \geq 2 \\ x+5 \geq 4 \\ x \geq -1 \end{array}$$

$$6) (2m+3)^{2/3} = (-2m-1)^{1/3}$$

HOMEWORK:

WORKSHEET
EQUATIONS INVOLVING RADICALS
17-40